

What is claimed is:

1. A method for analyzing power plane quiescent current measurements performed on a group of integrated circuits, comprising:

reading a plurality of data sets, each of said data sets containing a plurality of quiescent current values corresponding to a plurality of stimulus vectors of said measurements, where in each of said data sets contains data gathered on a corresponding one of said group of integrated circuits;

selecting one of said stimulus vectors as a reference vector;

computing an estimator of quiescent current for each remaining one of said stimulus vectors as a function of reference vector quiescent current level; and

normalizing said quiescent current values in at least one of said data sets by calculating an expected quiescent current value for each of said remaining stimulus vectors and subtracting said expected quiescent current value for each of said remaining stimulus vectors from a corresponding one of said quiescent current values, whereby variations in said quiescent current measurements that are not due to activated defects are reduced and said quiescent current measurements are categorized in ranges of quiescent current levels.

2. The method of Claim 1, further comprising discarding ones of said quiescent current values that are above a threshold prior to performing said computing and normalizing to select quiescent current values that are not indicative of activated defects.

3. The method of Claim 2, further comprising:

cross-correlating remaining ones of said quiescent current values across said plurality of data sets, prior to performing said computing and said normalizing; and

5 discarding quiescent current values for which a result of said cross-correlating is below a threshold.

4. The method of Claim 3, wherein said discarding discards an entire one of said data sets in response to detecting

10 that a correlation of said data set is below a threshold.

5. The method of Claim 1, further comprising:

subsequent to said normalizing, determining whether or not any of said normalized quiescent current values 15 indicate the presence of an activated defect; and

responsive to determining that one of or more of said normalized quiescent current values indicates the presence of an activated defect, discarding quiescent current values corresponding to said one or more normalized 20 quiescent current values.

6. The method of Claim 5, further comprising repeating said computing and normalizing responsive to determining that one of or more of said normalized quiescent current 25 values indicates the presence of an activated defect.

7. The method of Claim 1, wherein each of said group of devices includes a defect that is activated by at least one of said stimulus vectors, whereby said method

30 determines a set of regressions for normalizing quiescent current data without requiring a defect-free device.

8. A computer program product for use with a workstation computer, wherein said computer program product comprises signal bearing media containing program instructions for execution within said workstation computer for analyzing 5 power plane quiescent current measurements performed on a group of integrated circuit, wherein said program instructions comprise program instructions for:

reading a plurality of data sets, each of said data sets containing a plurality of quiescent current values 10 corresponding to a plurality of stimulus vectors of said measurements, where in each of said data sets contains data gathered on a corresponding one of said group of integrated circuits;

selecting one of said stimulus vectors as a reference 15 vector;

computing an estimator of quiescent current for each remaining one of said stimulus vectors as a function of reference vector quiescent current level; and

normalizing said quiescent current values in at least 20 one of said data sets by calculating an expected quiescent current value for each of said remaining stimulus vectors and subtracting said expected quiescent current value for each of said remaining stimulus vectors from a corresponding one of said quiescent current values, 25 whereby variations in said quiescent current measurements that are not due to activated defects are reduced and said quiescent current measurements are categorized in ranges of quiescent current levels.

9. The computer program product of Claim 8, wherein said program instructions further comprise program instructions for discarding ones of said quiescent current values that are above a threshold prior to executing said program

5 instructions for computing and normalizing to select quiescent current values that are not indicative of activated defects.

10. The computer program product of Claim 9, wherein said program instructions further comprise program instructions for:

cross-correlating remaining ones of said quiescent current values across said plurality of data sets, said program instructions for cross-correlating executed prior

15 to said program instructions for computing and normalizing; and

discarding quiescent current values for which a result of said cross-correlating is below a threshold.

20 11. The computer program product of Claim 10, wherein said program instructions for discarding discard an entire one of said data sets in response to detecting that a correlation of said data set is below a threshold.

12. The computer program product of Claim 8, wherein said program instructions further comprise program instructions for:

subsequent to said normalizing, determining whether
5 or not any of said normalized quiescent current values indicate the presence of an activated defect; and
responsive to said program instructions for
determining having determined that one of or more of said
normalized quiescent current values indicates the presence
10 of an activated defect, discarding quiescent current
values corresponding to said one or more normalized
quiescent current values.

13. The computer program product of Claim 12, wherein said
15 program instructions further comprise program instructions for repetitively executing said program instructions for computing and normalizing responsive to said program
instructions for determining having determined that one of
or more of said normalized quiescent current values
20 indicates the presence of an activated defect.

14. A workstation comprising:

a memory for storing program instructions and data values for analyzing power plane quiescent current measurements performed on a group of integrated circuits;

5 a processor for executing said program instructions, wherein said program instructions comprise program instructions for

reading a plurality of data sets, each of said data sets containing a plurality of quiescent current values
10 corresponding to a plurality of stimulus vectors of said measurements, where in each of said data sets contains data gathered on a corresponding one of said group of integrated circuits,

15 selecting one of said stimulus vectors as a reference vector,

computing an estimator of quiescent current for each remaining one of said stimulus vectors as a function of reference vector quiescent current level, and

normalizing said quiescent current values in at least
20 one of said data sets by calculating an expected quiescent current value for each of said remaining stimulus vectors and subtracting said expected quiescent current value for each of said remaining stimulus vectors from a corresponding one of said quiescent current values,
25 whereby variations in said quiescent current measurements that are not due to activated defects are reduced and said quiescent current measurements are categorized in ranges of quiescent current levels.

15. The workstation of Claim 14, wherein said program
instructions further comprise program instructions for
discarding ones of said quiescent current values that are
above a threshold prior to executing said program

5 instructions for computing and normalizing to select
quiescent current values that are not indicative of
activated defects.

16. The workstation of Claim 15, wherein said program
10 instructions further comprise program instructions for:

cross-correlating remaining ones of said quiescent
current values across said plurality of data sets, said
program instructions for cross-correlating executed prior
to said program instructions for computing and
15 normalizing; and

discarding quiescent current values for which a
result of said cross-correlating is below a threshold.

17. The workstation of Claim 16, wherein said program
20 instructions for discarding discard an entire one of said
data sets in response to detecting that a correlation of
said data set is below a threshold.

18. The workstation of Claim 14, wherein said program
25 instructions further comprise program instructions for:

subsequent to said normalizing, determining whether
or not any of said normalized quiescent current values
indicate the presence of an activated defect; and

30 responsive to said program instructions for
determining having determined that one of or more of said
normalized quiescent current values indicates the presence
of an activated defect, discarding quiescent current
values corresponding to said one or more normalized
quiescent current values.

19. The workstation of Claim 18, wherein said program
instructions further comprise program instructions for
repetitively executing said program instructions for
computing and normalizing responsive to said program
5 instructions for determining having determined that one of
or more of said normalized quiescent current values
indicates the presence of an activated defect.

10 20. The workstation of Claim 14, wherein said workstation
is coupled to a wafer test unit for providing said
stimulus vectors and measuring said quiescent current
values.